REMARKS

This responds to the Final Office Action mailed on January 5, 2009.

Claims 57, 62, 67-68 and 78 are amended, and claim 77 is canceled; as a result, claims 57-64, 67-68, 71-76, and 78 are now pending in this application.

The Examiner is thanked for the courtesy of a telephonic interview with Applicant's Representative on March 12, 2009, in which the rejections in the Office Action were discussed. In particular, the Examiner was of the opinion that the submission of documents showing that a variety of media for and target explants from two or three different plants was known to the art would be persuasive to overcome the enablement rejection.

The 35 U.S.C. § 112, First Paragraph, Rejection

Claims 57-61, 63-64, 67-68, and 71-78 were rejected under 35 U.S.C. § 112, first paragraph, as lacking enablement. In particular, the Examiner asserts that there is a lack of disclosure of media constituents and target explants for transformation and so undue trial and error would be required by one of skill in the art to practice the claimed invention. This rejection is respectfully traversed.

It is Applicant's position that media and target explants to transform a wide variety of plants were known to the art prior to Applicant's filing. See, e.g., Enriquez-Obregon et al. (Biotechnologia Aplicada, 14:169 (1997)) (transformed sugarcane) and Perl et al. (Biotechnology, 14:624 (1996)) (transgenic grape), references cited against the claims under 35 U.S.C. § 102 and/or § 103, Bidney et al. (Plant Molecular Biology, 18:301 (1992)) (of record) (transgenic tobacco and sunflowers), Liu et al. (Plant J., 23:687 (2000)) (transgenic wheat) (copy enclosed), Ku et al. (Nat. Biotech., 17:76 (1999)) (transgenic rice) (copy enclosed), the abstract for Gould et al. (Plant Physiol., 95:426 (1991)) (transgenic maize) (copy enclosed), and the abstracts for Lynch et al. (J. Econ. Entomol., 92:246 (1999)) (transgenic corn), Schenk et al. (Plant Mol. Biol., 39:1221 (1999)) (transgenic banana), Srivastava et al. (Proc. Natl. Acad. Sci. USA, 96:11117 (1999)) (transgenic wheat), and Kohli et al. (Plant J., 17:591 (1999)) (transgenic rice) (a copy of each of those abstracts was enclosed with the Amendment filed on September

17, 2008). Applicant need not teach what is well-known to the art. Hybritech Inc. v. Monoclonal Antibodies, Inc., 231 U.S.P.Q. 81, 94 (Fed. Cir. 1986).

Therefore, withdrawal of the § 112, first paragraph, enablement rejection is respectfully requested.

The 35 U.S.C. § 103 Rejection

Claims 57-64, 67, 71-73, and 75-78 were rejected under 35 U.S.C. § 103(a) as being obvious over Enriquez-Obregon et al. (Biotechnologia Aplicada, 14:169 (1997)) taken with Hansen et al. (Trends in Plant Science, 4:226 (1999)). This rejection, as it may be maintained with respect to the pending claims, is respectfully traversed.

Enriquez-Obregón et al. report on the effect of three antioxidants on the growth of *Agrobacterium* in sugarcane. It is disclosed that a combination of ascorbic acid (15 mg/L), cysteine (40 mg/L) and silver nitrate (2 mg/L) was added to the precoculture liquid medium and the solid medium. After 3 days on solid media, explants were placed on selective media and the number of transformants determined (Table 3). It is disclosed that an efficient regeneration technique results in transgenic plants from the transformed explants, however, no data on those plants is provided in the Enriquez-Obregón et al. article.

Hansen et al. state that successful transformation of plants requires target tissues competent for propagation, an efficient DNA delivery system, agents to select for transgenic tissues, the ability to recover fertile transgenic plants at a reasonable frequency, a simple, efficient, reproducible, genotype-independent and cost-effective process, and a tight timeframe in culture to avoid somaclonal variation. Hanson et al. also state that "[a]t present, three techniques appear to fulfill these criteria," one of which is *Agrobacterium*-mediated transformation.

It is unclear from the disclosure in Enriquez-Obregón et al. whether cysteine alone in the solid medium, and at what concentration, would result in enhanced stable transformation. Moreover, given that the use of cysteine in solid media in Perl et al (Biotechnology, 14:624 (1996)), a document previously cited against the claims, did not reduce or block grape calli necrogenesis, one of skill in the art in possession of Enriquez-Obregón et al. would not be motivated to use cysteine in solid co-cultivation media to enhance stable transformation or have

a reasonable expectation there are amounts of cysteine that, when present in solid media, enhance stable transformation of plant tissue or cells.

In this regard, the Examiner is requested to consider the Rule 132 Declaration enclosed herewith, executed by Dr. Todd Jones. In that Declaration, with regard to the disclosure in Enriquez-Obregón et al., Dr. Jones states that in the absence of data, there is no reason to expect that a combination of agents, let alone an individual agent, at any particular concentration would enhance stable transformation (paragraph 4 in the Declaration). In support of that position, Dr. Jones describes transformation efficiency results obtained with embryogenic *Brachypodium distachyon*, wheat and maize cultures infected with *Agrobacterium* that had been cultured on cysteine containing co-cultivation medium.

For *Brachypodium distachyon* (a monocot grass), Dr. Jones states that although no enhancement of transformation was observed with the one cysteine treatment tested, that concentration of cysteine was similar to one of the concentrations which enhanced sugarcane explant viability in Enriquez-Obregón et al. and was over two times greater than the concentration of cysteine employed in the combination of agents used in transformation experiments in Enriquez-Obregón et al. (paragraph 6 in the Declaration).

The data for wheat demonstrated that concentrations of cysteine of 300 mg/L and 350 mg/L were the most effective at enhancing transformation, whereas lower and higher concentrations did not result in a significantly different effect or resulted in an inhibitory effect relative to control cultures (paragraph 7 in the Declaration). With respect to corn, Dr. Jones states that cysteine concentrations of 150 and/or 300 mg/L enhanced transformation efficiencies (paragraph 8 in the Declaration).

Dr. Jones also describes experiments where combinations of cysteine and glutathione, ascorbic acid or silver nitrate were tested for enhancement of corn transformation efficiencies. He concludes that transformation efficiency in corn was most often decreased when a combination of cysteine and ascorbic acid, glutathione or silver nitrate was employed. He also notes that in view of the results described in the Declaration, the use of a combination of agents by Enriquez-Obregón et al. may have actually decreased transformation efficiency.

In response to the assertion by the Examiner, that one of skill in the art would be motivated to test higher concentrations of cysteine in view of Enriquez-Obregón et al., Dr. Jones

states that Enriquez-Obregón et al. clearly teach the use of a combination of agents for "improved" transformation efficiency and regeneration of embryogenic cultures. Moreover, Dr. Jones point out that for those transformation experiments, Enriquez-Obregón et al. selected the lower concentration of the two tested concentrations of each of the three agents to include in pre-coculture liquid medium and co-culture medium. Therefore, Dr. Jones states that the Examiner's position is contrary to the teachings in Enriquez-Obregón et al.

In addition, Dr. Jones points out that the data for wheat described in the Declaration and for soybean in the specification, and a comparison of the results for *Brachypodium* described in the Declaration and for sugarcane in Enriquez-Obregón et al., show that "higher" concentrations of cysteine do not necessarily result in enhanced transformation.

Dr. Jones concludes that in view of Enriquez-Obregón et al., it would not be obvious to one of skill in the art to employ cysteine or other sulfhydryl-containing agents alone in co-cultivation media to enhance plant transformation of embryogenic cultures. Finally, Dr. Jones concludes that it was unexpected that concentrations of cysteine that were much higher than those employed in Enriquez-Obregón et al. would yield enhanced transformation efficiencies in plants such as soybean, wheat and corn.

Therefore, withdrawal of the § 103(a) rejection is appropriate and respectfully requested.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's representative at (612) 373-6959 to facilitate prosecution of this application.

If necessary, please charge any additional fees or deficiencies, or credit any overpayments to Deposit Account No. 19-0743.

Respectfully submitted,

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Date April 6, 2009

By _____
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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being filed using the USPTO's electronic filing system EFS-Web, and is addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on April 6, 2009.

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